FWU Journal of Social Sciences, Winter 2025, Vol.19, No.4, 153-165
DOI: http://doi.org/10.51709/19951272/Winter2025/13

Quality Learning Management: Framework Design to Support and Understand in the Digital Era

Fitri Nurmahmudah
Badan Riset dan Inovasi Nasional, Indonesia

Eka Cahya Sari Putra, Abdul Rahman, Arta Mulya Budi Harsono
Universitas Lambung Mangkurat, Indonesia

The development of technology is a challenge and at the same time provides benefits for the element of education. The main factor that education can be part of development is having the management ability. The purpose (1) to know the aspects that modern teachers need to have in educating and (2) to create a conceptual framework for student management. The research method is qualitative with a case study design. Data collection using interviews. Data validity using source triangulation. The research procedure uses the Yin model. Data analysis is done with the help of Atlas.ti software. The result is that children's education according to their time has important indicators. Research novelty that needs to be understood are aspects of teachers and learning management. The integration of teacher skills aspects is to be a learning partner, active-creative-and-innovative, to be a role model for students, and to have broad insights, while novelty from the learning aspect is two components, namely synergy and tool design. The conceptual framework of the results describes the whole circle of learning management consisting of collaboration between parents-students-teachers in utilizing technology to improve the development of thinking patterns, and learning models, and improve learning achievement.
***Keywords**:* conceptual framework, development of technology, teacher aspect

Times are changing along with the sophistication of technology. Likewise, the conditions of the social order of society and education make it possible to keep running by utilizing the latest technology. The use of technology cannot be separated from how the elements of education organize and convert into educational activities. It takes real effort from various elements to use technology by the portion of education. This needs to be accompanied by real and competent abilities to support the quality of education (Akareem & Hossain, 2016). Especially in learning that requires innovation to be able to develop according to the era (Syakdiyah et al., 2019).

The sophistication of technology that currently supports daily needs. People depend on themselves to complete work and activities assisted by technology. This is the main reason for teachers to be able to apply it in the learning process. Learning that is conventional and dominated by teachers will not be able to achieve the expected goals by the development of the era. The involvement of teachers in the learning process, system operations, and utilization of technology plays an important role in the development of the current era. This is in line with the research conducted by Mahmudah et al., (2021) that it is necessary to increase knowledge, skills, and education by teachers to be able to master technology and apply it to learning.

Based on the Technology Adoption Life Cycle (TACL), the average ability to use technology and utilize it in life and learning has a high percentage rate.

Correspondence concerning this article should be addressed to Dr. Fitri Nurmahmudah, Badan Riset dan Inovasi Nasional, Indonesia, Email: fitr060@brin.go.id

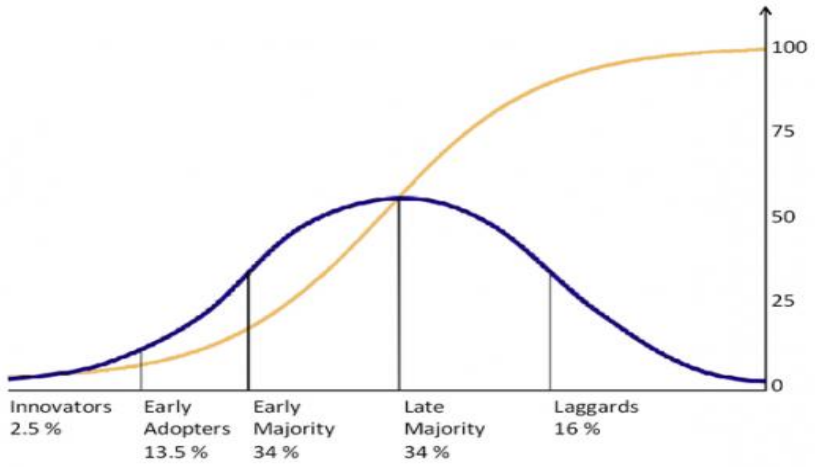

Figure 1 above explains that the highest percentage of everyday technology utilization is due to the early majority and late majority. The initial majority (34%) can be interpreted that in this category people adopt technology to support their daily activities after various levels of time. The time in this category has a much longer vulnerability. Meanwhile, the late majority is a category of average members of society who adopt the latest innovations and technology. Society has innovation with a high level of skepticism. The skeptic in question has little finance and a social status below average. This means that if TALC is adopted into the field of education, progress in the field of education, especially in learning, will depend on how teachers have technological skills, utilize technology in learning, and can be used to improve the quality of learning.

The slow teacher usually focuses on "tradition", where he is reluctant to take advantage of the latest technology. Likewise, this age factor is an important factor in upgrading skills and abilities to increase competence in learning (Cahyono et al., 2021). Learning that still uses conventional traditions while technology has rapidly developed is just as hindering. Because the quality of learning management will depend on how well the teacher can make learning interesting and attractive to students. Understanding changing learning strategies carried out by teachers is one form of skill that must be developed. Teachers' skills in computational thinking and digital utilization are of important things to change the way of learning (Tripon, 2022). The digital competencies and skills that teachers bring into play when using devices in classrooms in innovative educational experiences (Rodríguez Hoyos et al., 2021). Teachers possess digital attitudes and skills that allow them to carry out dynamic adequate, current, and innovative work, which transforms and improves teaching-learning processes while making them more flexible (Fernández-Morante et al., 2023; George-Reyes & Glasserman-Morales, 2022). The development of these skills is not only associated with the use and access to technologies but with the knowledge, skills, and correct attitudes in this use (Martins et al., 2023). These skills are an important part of teacher self-development to face challenges in the increasingly rapid development of technology.

The educational challenge in the era of the digital era is how educational institutions can produce high-quality and highly competitive graduates. This requires powerful strength and integration between educational institutions and the government to jointly support the success of realizing the challenges of education in the era of the digital era. Lase (2019) states that the education digital era is a response to the need for the digital era, where humans and technology are converging to create new opportunities creatively and innovatively. The digital era not only “shakes” the existence of management education but also challenges the progress of better education in the future (Kalargyrou & Pescosolido, 2012). Educational institutions in the digital era must be aware of the emergence of learning style trends in students (Heriyanto et al., 2020). The same thing was also conveyed by Lawrence et al., (2019) that in today’s fast-changing technology world. The digital era has set the need to redesign the education system mainly on transforming the learning and teaching strategies around the world (Allen et al., 2016).

Many things need to be done by educational institutions to face the digital era competition. Combination and collaboration in the delivery of education require a close relationship between human resources and developing technology. As conveyed by Mian et al., (2020) this new industrial era of digitization was initiated with the emergence of electronics. The digital era has changed the thinking of educational leaders in terms of technology usage (Huang et al., 2021). Technology has a major role that can be used by educators and educational institutions in the challenges of the digital era (Altowairiki, 2021). This is stated by Hermann et al., (2016) as a collective term for technologies and

concepts of value chain organization. So the productivity of the digital era challenges in education is the performance and quality of learning provided by teachers that can improve the quality of graduates.

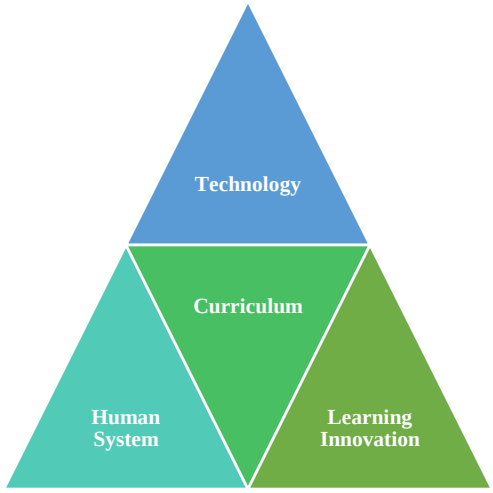

Figure 2. Education Component in Facing the Challenges of the digital era

The quality of learning management in the digital era can be seen from three things, namely people and strategy. The teacher is one of the fundamental things for improving the quality of learning in schools. Teachers who have expertise, skills, and competencies in teaching and in making learning innovations will be able to provide learning that is acceptable to students at school. Likewise, when you can take advantage of technology for the effectiveness of learning in this digital era. Need systematic steps to be able to develop teacher performance. As stated Ghozali (2018) the efforts offered by the government to enhance the quality of education have also been conducted by launching a teacher certification program. Likewise, when teachers have a contemporary and comprehensive understanding, they will certainly have concrete steps to improve the existing curriculum (Madsen et al., 2019); (Funa et al., 2022). Darma et al., (2020) state that the education in question is a phenomenon that responds to the needs of the industrial revolution by adjusting the new curriculum to the current situation. Afrianto, (2018) says that professional teachers must be aware of and adapt themselves to this development.

Teachers in the challenge of the digital era have a role that technology cannot replace. The role of the teacher is especially important for character-building students in utilizing technology, especially elementary school students (Sumiran et al., 2022). The existing technology will not be able to teach students how to be kind, think positively, and have enthusiasm for problem-solving. This is also related to innovative learning in the classroom (Venkateswara et al., 2022). Technology is only a tool used, while the main role is a teacher. Teachers provide appropriate direction for the development of potential primary school students regarding the use of technology and other skills. The statement was supported by Heriyanto et al., (2019) that education needs to improve the quality of workforce skills, digital talent, and social skills.

One way to face the digital era is to have the right strategy. In all discussions, the most important strategy in playing a role in the digital era is people. In education, people are the principal, teachers, and students. These three main components contribute to making a concept used for learning in the digital era. It is the relationship between these main components that will shape educational change, learning concepts that are in line with the needs of the digital era, and digitization that can be used as needed. The strategy needed is a qualified skill. When the digital era is taken into consideration, future engineers need to enhance their professional, social, methodical, and personal competencies (Mohy & Din, 2020). Of course, a strategy that has an approach related to learning patterns in elementary schools. Students who are increasingly in touch with the latest technologies such as gadgets and laptops need good skills so that they are not misused.

Schools have different strategies. This is possible because of the performance of school principals and teachers who are leaders and decision-makers (Widodo et al., 2022). In general, the right strategy is to increase the capacities, capabilities, skills, and competencies needed to face the era of the digital era. The teacher who is the main role is ideally capable of operating the latest technology. Data and technology tools are passive, so they only act according to the user's wishes. The framework of reference for digital era skills will be working life skills, which are defined as the knowledge, skills, or attitudes that are needed to perform a job successfully (Clovert, 2011). This can be seen in Figure 3

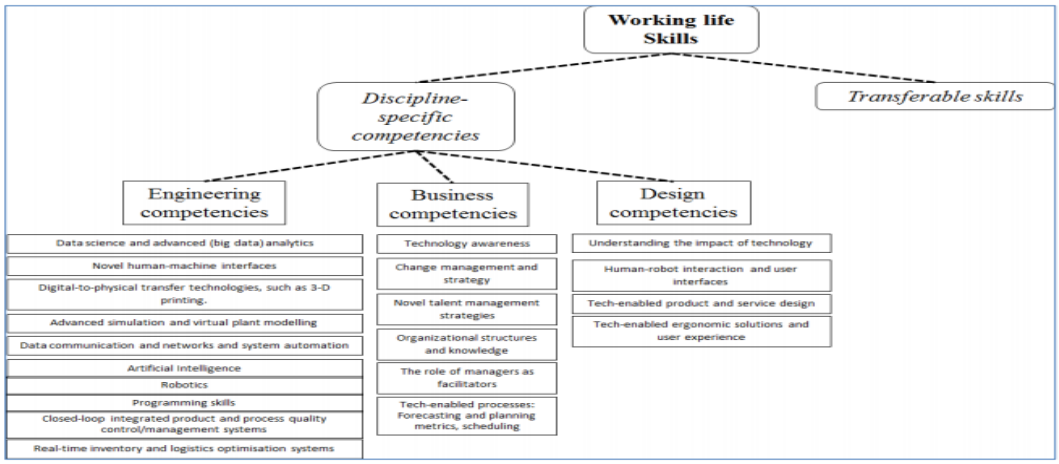

Figure 3 General taxonomy of working life skills found in the digital era (Clovert, 2011)

Various explanations above, this research is a solution to be able to provide provisions for teachers in learning management according to the times. This research supports the various theories and results of previous research related to the readiness of teachers to use technology in learning. Important aspects in improving the quality of education through learning. Thus, the main objectives of writing this article are to (1) know the aspects that modern teachers need to have in educating students after the development of the digital era; and (2) create a conceptual framework for student management according to the digital era.

Method

Research Design

The method used in this research is qualitative with a type of case study. The function of all science is to investigate answers to questions about the evolution of an experience or case via interview (Ii et al., 2007). The reason for using this type of qualitative research is because it explores the meaning related to learning management in the digital era at elementary school. This type of research is able to reveal the meanings that can be taken from learning activities. Qualitative research is a situated activity that locates the observer in the world (Creswell, 2007). The approach used in this research is a case study. The reason for using a case study approach is to focus on quality learning management in the digital era at elementary school which is then raised as a case to be studied in depth so that it is able to uncover the reality behind learning management activities that have been carried out by elementary schools in the face of the digital era. Case study to investigate a research issue (Yin, 2003). The reason for choosing this method is to dig deeper into information from teachers related to learning management carried out in the digital era.

Research Setting and Participants

The research was conducted in Yogyakarta, Indonesia with the three best primary schools. There are only 1,863 elementary schools in Yogyakarta. The selection of primary schools as objects in this study uses strict selection criteria in accordance with the research objectives, namely teacher competency scores, school performance, student academic achievement, and public opinion about the quality of the school concerned. The school which is the object of this research has utilized technology that does not exist in other schools. This is what interests researchers to deepen and explore the meaning of developing learning management in the digital era.

The participant-taking technique used was purposive sampling. The purpose of research synthesis is to produce new knowledge by making explicit connections and tensions between individual study reports that were not visible before (Suri, 2011). Of the thousands of primary schools in Yogyakarta, both public and private, three primary schools were selected to participate in this research using interviews. In the interview session, researchers chose teachers because they have the ability to organize classes directly, teachers also directly utilize technology in learning, and teachers also understand how the methods used for millennial children today. Teachers who are directly involved in classroom learning then become participants in interviews. On the other hand, researchers also have teacher selection criteria, namely those who have teaching experience for the last 10 years, have teacher competency values above average and have the ability to operate learning technology. Data support in this study was the principal and vice principal in the curriculum field. Table 1. Below are the data collection methods used and the participants in the study.

Table 1
Data Collection Matrix – Type of Information by Source

Participants	Total	Type of Information
Headmaster	3	Interview
Deputy Principal of Curriculum School	3	Documentation
Teacher	3	Interview

Data Collection Technique and Guidelines

The data collection technique in this study used two things, namely interviews and documentation. Interviews were conducted openly and systematically. Interviews are widely used as a research strategy to gather information about participants' experiences, views, and beliefs concerning a specific research question (Ryan et al., 2016). The purpose of using interview data collection techniques is to explore the meanings that have been carried out by school principals, vice principals in the field of curriculum, and teachers in preparing for learning in the digital era. Of course, things related to learning activities by utilizing the latest technology. The following are the data collection guidelines for this study:

Table 2.
Interview Guideline

The role of the teacher in learning	Teacher's attitude Teacher development The teacher's ability to teach The knowledge the teacher has Teacher competence Teacher communication required
Teacher interaction using technology	The way teachers build networks Ability to utilize technology Learning equipment Teacher's realtionship with parents
Learning at school	Supporting data Information used Applications that are utilized Learning materials

Trustworthiness

One of the things that must be considered in research is the quality of the research process to obtain data with high credibility. The trustworthiness of qualitative content analysis is often presented by using terms such as credibility, dependability, conformability, transferability, and authenticity (Elo et al., 2014). Trustworthiness that the researcher does in completing this research is by using triangulation methods, namely by participatory observations when learning at Elementary School takes place. The researcher checked the data collected with the activities carried out at school.

Data Analysis

In qualitative research, data analysis is carried out throughout the research process. In this practice qualitative research stands on its own, this "pure" type has taken many different forms in subject research (Ospina, 2004). Starting from the selection of participants to drawing conclusions. In this study, data analysis was carried out using the Yin model combined with the researcher's integrated steps. Every case study analysis should follow a general analytic strategy, defining priorities for what to analyze and why (Yin, 2016). Furthermore, after the data is ready, the analysis step uses software assisted by Atlas.ti version 8. The following are the analysis steps used in this study:

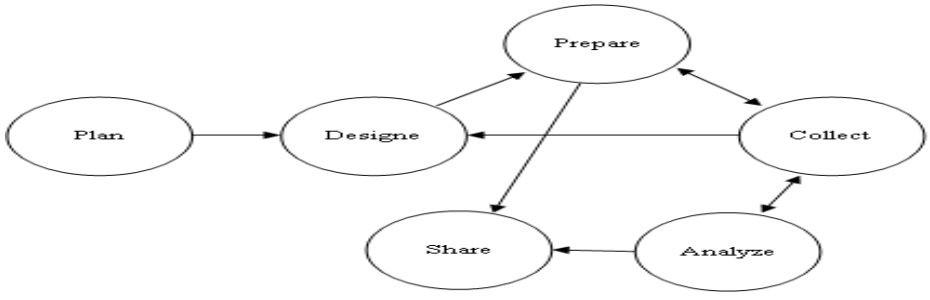

Figure 4. Yin Model Data Analysis
Source: *Handbook of Applied Social Research Methods* Yin (2003)

This research procedure in detail can be explained as follows:

Plan

At this stage of the plan, researchers conducted a preliminary survey, namely by looking for objects and research subjects related to learning management in the era of digital by using the latest technology for learning activities. From 1,852 elementary schools in Yogyakarta, researchers found 8 elementary schools that met the criteria of the researcher. Then the researcher did the elimination to get 3 elementary schools according to the indicators that the researchers made.

The benchmarks for the characteristics determined by the researcher are seen from (1) accreditation score, (2) primary school teacher competency test scores, (3) student achievement in participating in competitions at all levels (regional, national, international), (4) test scores nationally, (5) utilizing technology in the learning process; In addition, researchers also collect literature reviews, to (a) identify research gaps, (b) formulate research problems, (c) determine research locations, and (d) conduct pre-research. In the pre-research stage, researchers compiled a research design that included an outline related to learning management in the era of digital by compiling interview guidelines that would be used in field data collection.

Design

The research design used is a case study with a descriptive approach. The main data collection uses the interview method, while the data for support use documentation.

Prepare

The preparation made by researchers is to compile protocols in taking field data using interview protocols and documentation. Next, contact the participants and confirm the schedule for field data collection interviews.

Collect

The preparations made by the researcher were to compile a protocol for field data collection using interview and documentation protocols. Then contact the participants and confirm a schedule for conducting interviews for field data collection.

Analyze

The fifth stage is field data analysis. At this stage, the researcher carried out a series of qualitative data analysis processes with the help of the qualitative data analysis software ATLAS.ti 8.3.17 to do coding, make categorization, create themes, and make concept maps of the research, namely learning management in the digital era. Atlas.ti software is used to make it easier to manage and organize data from transcripts to the preparation of research concept maps (Mahmudah, 2021).

Share

The final stage of this research is to disseminate the research results by making articles and submitting them to journals.

Results and Discussion

The object of this research is to explore the meaning of student management in the present. Data were collected using open and in-depth interviews with three participants in three private elementary schools in Yogyakarta. The school indicator chosen is because it has a different educational character from other schools, such as elementary schools whose learning activities are carried out with various research, exploration, experimentation, prioritizing practical life, and complete facilities that support the success of student education in schools.

Based on the results of field data collection through interviews teachers have a major role in learning at school. Active teachers are able to involve all students in various school programs both inside and outside the classroom in developing the ability to interpret and understand. This is in accordance with statement 1 / w / 1, that, "teachers who are active and have many ideas in learning development will definitely be closer to students", as well as statement 2 / w / 2-3, that:

> "Teachers who are not active will kill potential students. This can be ensured that students will never develop properly. Mmmm .... especially if the student is silent. He will definitely not be able to open up and explore himself. Quiet person, a quiet teacher. It's over "

The statement of the participants above is the importance of the teacher's ability to provide assistance to students to be able to optimize their potential in understanding knowledge. The teacher is the most important part of the process of increasing student understanding. This statement was emphasized by 2 / w / 2, that "teachers must be fully involved and understand the characteristics and development of students". This is possible so that "the teacher

becomes part of the student development process", 3 / w / 2. So that the teacher is not just a 'teacher' in a profession but a teacher who has good role models for the progress and learning achievement of students.

Therefore, the basic understanding of teachers is also a focus to be able to develop current education for students. 1-3 / w / 4 gives a statement that is in the same sense, that "teachers who have broad insight will be easily accepted by students with motor development commensurate with the times". The various statements of the participants above were then analyzed using the Atlas.ti 8 software so that a pattern can be found for educators today in providing learning to students according to their time.

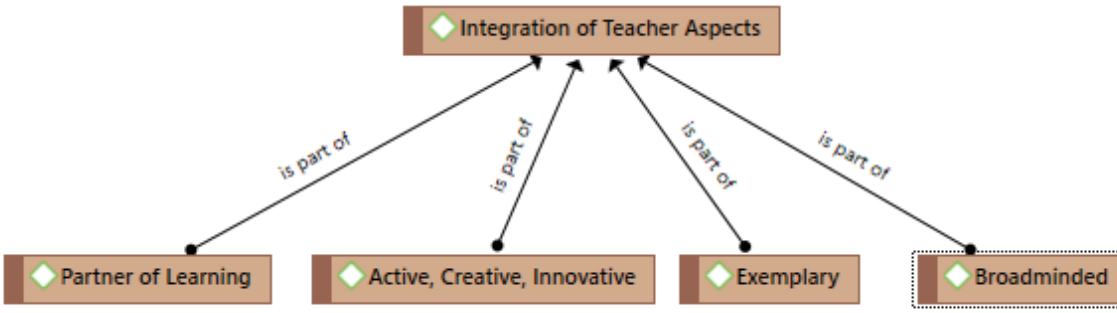

Figure 5. The findings of data analysis assisted by atlas.ti software 8

One of the effective ways to develop schools is to have teachers who are able to create networks both in other agencies and with stakeholders. This ability is one of the formations of professional teachers. "Expanding the network to gain knowledge, gain experience, and become one to prioritize the development of teaching materials for students by prioritizing current and future development knowledge such as technology, the ability to operationalize, and self-potential insights that need to be developed," 1-3 / w / 5. This is in line with the latest technological developments that teachers do not just stand idly by waiting for assignments to complete work and learning, but are up-grade and up-to-date related to technological advances and can be used in learning. The statement of resource persons 1-3 / w / 6 supports that "the need to increase the ability of teachers to develop themselves is not only welcoming the coming technology but also having the willingness to learn and welcome with all the openness of insight".

Technological progress that is not supported by the preparation and adequacy of learning equipment means that teachers cannot take advantage of existing technological advances. Likewise, students will really lack an understanding of various technological advances and less understanding of the benefits of existing technology for learning. The carrying capacity is in line with human resources in education and the involvement of parents in supporting and utilizing learning tools. This was conveyed by 1 / w / 8, that "technological advances and the availability of adequate learning equipment allow the creation of a globally competitive learning environment". The participant's statement was also supported by other participants 2-3 / w / 8 that "the learning process that takes advantage of technological advances by having easy access to various learning resources is a positive impact that must be accompanied by complete facilities". Various statements of the participants above, it can be found a result of data analysis assisted by the Atlas.ti 8 software, which can be seen in Figure 3.

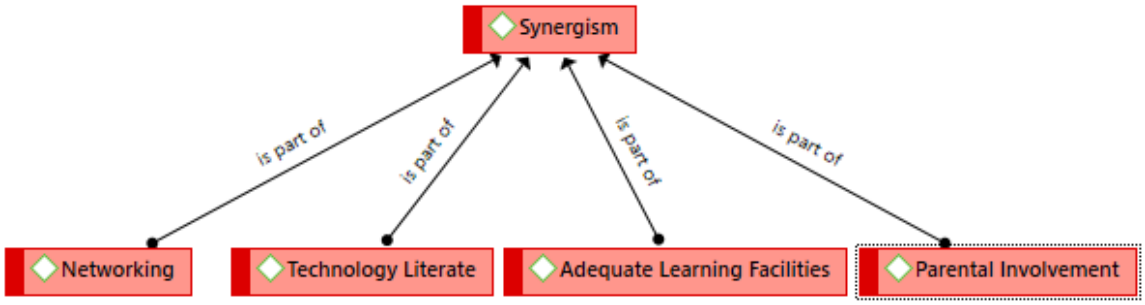

Figure 6. The findings of data analysis assisted by atlas.ti software 8

Technological advances such as these devices change lifestyles. Likewise the pattern of learning arrangements. 1 / w / 9 states that "times change so that learning patterns are also presented with changing times" because, with the changing times, students and teachers have full access to information. "The openness of access affects the students'

mentality if not given the right learning model", 2 / w / 9. This statement is also supported by 3 / w / 9 that "children who are allowed to access any information may become addicted if they are not given the right learning method". The development of this increasingly modern era does not need to be confused about how to record and report student progress. Likewise, teachers do not miss the opportunity to follow the flow of technological developments. More and more models and methods can be used in the application and software-assisted learning. The findings from the various statements of the participants are summarized in Figure 4.

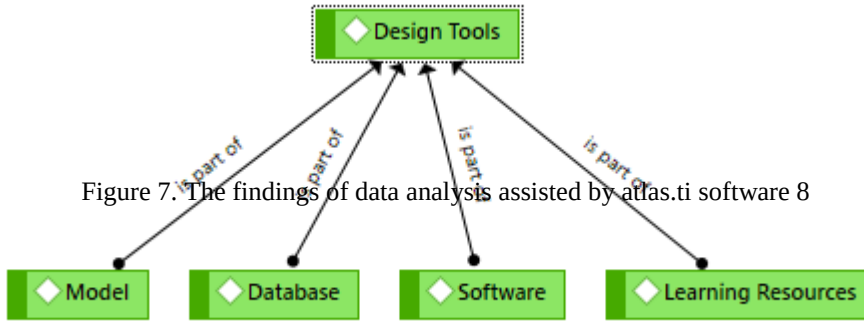

Figure 7. The findings of data analysis assisted by atlas.ti software 8

Discussion

Based on the results of the research and data analysis above, this article discusses the teacher's ability to educate students today and the conceptual management of learning according to their time.

Aspects need to be owned by today's teachers in educating

The findings of the research results in Figure 1 explain that an ideal teacher has aspects that must synergize between environmental conditions, abilities, and technological advances. The integration of the teacher's aspects from the research results is exemplary. The findings of this study are in line with the statement of research findings Wati & Kamila (2019) which states that over time, the role of teachers also changes in instilling character values because these aspects cannot be taught by machines.

The solid personality of a teacher can create a learning atmosphere and a learning process that can provide good examples. Teachers who have mature abilities and attitudes will be able to do more easily and flexibly face the times. The estuary of teacher readiness will be formed in the learning patterns of students who can take advantage of the latest technology to support the success of learning and the goals of the school that has been set.

Integration of other aspects of educators in research findings is the partner of learning. Collaboration between teacher-students and parents is important in today's education. Education without good cooperation between the core education can be sure that there will be gaps in improving the quality of education. Parents have an important role in education. This role is to ensure that the condition of students at home has a high carrying capacity in completing assignments and learning at school. The relevance between these three things makes success for students and the collectivity of school success in education. This is confirmed by Patrikakou (2015) that parent-student-teacher involvement is “more positively involved had higher levels of prosocial behavior and more academic success”. The same statement was also conveyed by Pirchio et al. (2013) that "the parent-teacher partnership has been identified as having an important role in children's development".

Active-creative-innovative is one of the keys of a teacher in improving skills and competencies in today's education. Being active in providing contemporary learning resources to actively creating learning media that is attractive and not boring for students is a characteristic of successful education today. This statement is in accordance with the results of research conducted by Kudryashova & Rybushkina (2016) that "active and creative can escape the traditional role of passive receptors and learn and practice how to apprehend knowledge and skills and use them meaningfully". A similar statement was also conveyed by Subramani & Iyappan (2018) that "innovative and creative teaching and learning methods are critical if we are to motivate and engender a spirit of learning as well as enthusiasm on the part of students".

In connection with the above, with the times, teachers are also required to have broad insights. Broad insight is one of the foundations for teachers to be involved in technological developments. Susilo (2015) states that "a teacher should be broad-minded to help students to become more broad-minded and expand the lens through which they experience the world". Having broad insight for teachers is an important part that must be owned because one of the sources of knowledge is having insight. Having insight is also the main asset for teachers to improve their abilities and

to give birth to the next generation who are intelligent and have high knowledge absorption. This statement also emphasized Oktradiksa (2012) that "the teacher's personality has an effect on mental development and scientific insight which can determine the extent to which he will bring all the potential that exists in students".

Learning management conceptual framework according to its era

Various results and discussions about the aspects that today's teachers need to have in contemporary learning for students, so it also needs support from school management in learning. The findings of the research that have been carried out are as shown in Figure 2, that education today requires teachers who have synergy which includes networking, technology literacy, adequate learning facilities, and parental involvement. Likewise, the findings described in Figure 3 have the understanding that learning management in today's students requires a model that is appropriate to the times, databases, the use of software, and the availability of learning resources. In summary, the findings can be seen in Figure 5

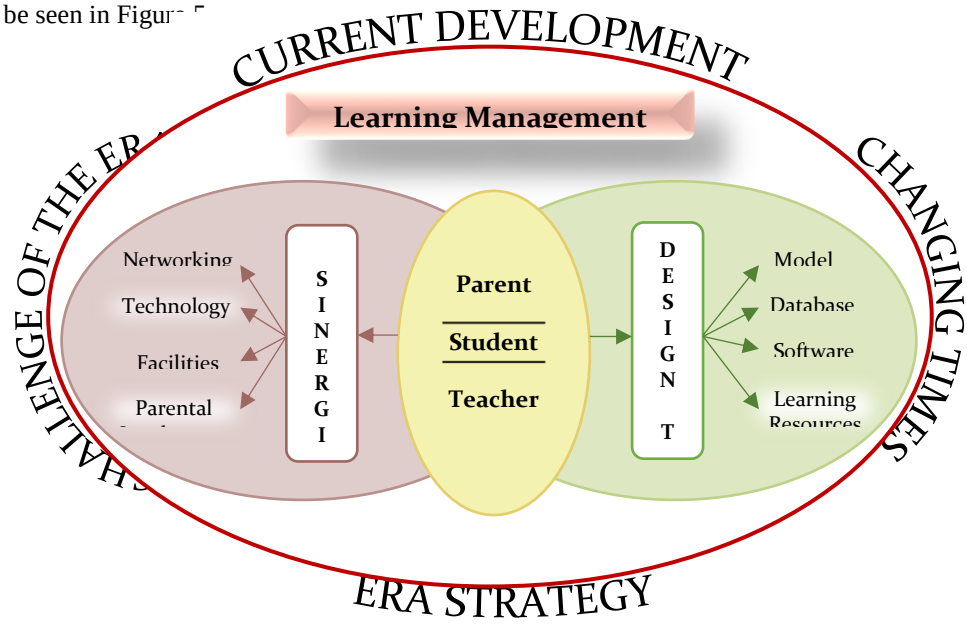

Figure 8. Conceptual framework of learning management according to the time's digital era

Figure 8 above means that one of the new paradigms of education management in the digital era has an important component in learning. These components are synergy and design tools. The two components, which are field findings, each have different indicators and are continuous with one another. Learning management in the digital era is the process of improving and changing learning according to the times. Redesigning to synchronize existing resources to the needs and technological developments that need to be utilized. The use of this technology aims to support and change the learning patterns and mindsets of students to follow current trends. Many are found in the digital era developing new applications that provide more interesting learning (Waluya & Asikin, 2019). Therefore, learning management needs to be upgraded with more varied new breakthroughs (Tampubolon, 2019), so that the era of digital has a positive contribution to student development (Febryani, 2019). Teachers in overcoming the challenges of digital transformation in education. Possible interventions encompass better tech access, enhanced training, fostering innovation in classrooms, and professional development (Anh et al., 2023).

As times change very rapidly has a very significant relationship with learning management. This requires a strong strategy so that the changing times can be faced by many elements of education. Not become a burden and not as a wind without being used The findings of this study provide information that one of the strategies needed is parent-student-teacher synergy. The main source of the success of education is the existence of a triangular relationship between parents, students, and teachers in an educational institution (Wahidy, 2010). Teachers and parents can act as facilitators, and motivators, and can nurture the student (Lo et al., 2013). Students' achievement and adjustment are influenced by teachers and parents (Desforges & Abouchaar, 2003).

Education for students is mainly from parents, while teachers in schools are partners or partners of parents. Many parents do not realize that their main education is not from educational institutions. Working parents can only ensure that children's education is fulfilled through educational institutions. Meanwhile, only the teacher knows about children's development, while parents are too busy at work. Therefore, with the changing times of the digital

era, parents have an important role and guardianship for the progress and development of children's potential both at home, environment and at school.

The role of parents and teachers in realizing student academic achievement is also supported because of the facilities in learning. The development of the times and the latest technology will be of no benefit if it is not supported by the availability of facilities for learning. The problem of educators in the digital era is caused by the lack of educational facilities (Prasetyo, 2020). The facilities will greatly affect the effectiveness and acceleration of the achievement of learning outcomes in this digital era (Afrianto, 2018). Therefore the need for support facilities is something that must be provided if you don't want to be out of date. Technology that is used to facilitate receiving knowledge and improve student skills.

Facilities cannot stand alone without being accompanied by technology literacy by parents-students-and-teachers. Technological literacy is very important in facing the times and technology. Technological literacy is the activity of understanding and being able to use increasingly sophisticated equipment in learning. Teachers who do not understand how to use and utilize the latest technology will find it difficult to keep up with the current development of student abilities that are increasingly complex and understand current technology. Likewise, parents who do not understand the ability to use technology will inevitably experience difficulties in monitoring the development and potential of their children.

This meaning is the development in the manufacture of armor specifically designed for soldiers in war. Not only armor but also an iron hat and bulletproof vest. This activity is a development of technology that Allah has taught the prophets according to the times. The same thing Allah also taught Prophet Sulayman Alaihissalam by lowering the wind. Allah shows the developments at the time of the Prophets. Likewise, as the times change to the present and future. The uncertain future development needs to be accompanied by the readiness of teachers-students and parents to meet it.

Technological literacy alone is not sufficient for the learning strategies of the digital era. The results showed that the teacher-parent-student synergy in times of development is networking. Professional teachers are those who are able to have many links to increase competency capacity in learning. Likewise students and parents. Networking is a way for teachers to collaborate with other teachers or with other institutions. One way to improve teachers professional competence is to have many networks (Wartomo, 2016). Because of that, the teacher will learn a lot, understand, and be able to add insights related to renewable technology (Ahmad, 2016).

The existence of a person with other people as an individual or group to provide mutual understanding. This includes that individuals in a social environment need help from others to survive, help each other, and develop. Human interaction to make networking involving multiple tasks is becoming more achievement (Lucas et al., 2018). The importance of networking for all elements of education is to improve achievement both study and work achievement so that it will open insights, and increase experience, and complex understanding of learning theory and practice such as the development of the era of digital.

The second component of this finding is the design of tools that have model indicators, databases, software, and learning resources. The design tools in this finding cover learning from teachers to students that involve parents. The right learning model for students is one that is associated with the era. Parents who have a conventional and hereditary learning model for children at home will not be used as a benchmark for providing appropriate learning today for children. Likewise, teachers who provide learning to students at school using contemporary models, ideally, share these experiences with parents. So that the models used in learning are interrelated and have the same direction so that there is no miss-match between teachers and parents.

The Flipped Classroom Model is a model that can be used by teachers in the era of digital (Soetanto, 2019). The Flipped Classroom model is a learning activity that students can complete at home (Nofrion, 2007). The teacher gives assignments to be completed first at home then the teacher explains in class. This is very appropriate for involving parents in the learning process. This Flipped Classroom model utilizes learning media that can be accessed online by students (Maolidah et al., 2017) and these full access materials are very supportive of student learning in schools. Of course, the teacher better understands the characteristics of students so that they are able to analyze to select and adjust the right model in the learning of the digital era.

The ease of learning in the digital era is also marked by the existence of a database. Presentation of information stored on a computer in a systematic manner. The database or database of the findings of this study is an easy way for teachers and/or students and parents to access all available information related to learning. Big data is the key to learning

in the digital era (Maulida et al., 2020). Information in one room can be accessed easily and informatively. With data-based information literacy skills, at least students, parents, and teachers are able to improve their communication skills well. So that information inequality or ignorance of information can be minimized. Likewise, the ease of access to learning resources for students.

Regarding the database, it is necessary to have software that supports these activities. The software from the findings of this research is related to all applications that can be used for learning both in the classroom, outside the classroom, and distance learning. Software concepts that need to be developed in learning are those that provide convenience (Wibowo, 2019). One of the things that need to be understood is e-learning (Natasuwarna, 2019). It is intended as an interactive and educational media for the core triangle of education, students-teachers-and-parents. Learning in the digital era without using software means that education actors are still unable to use and take advantage of the latest technology in improving learning achievement for students.

The various discussions regarding the conceptual framework of learning management according to the times above are interpretations of a combination of research findings and theory of research results. The perspective of this research has implications that need to be applied by parents, students, and teachers in improving learning in the digital era. This research becomes the foundation theme for further research related to learning models digital era, big data, and data mining, as well as interesting applications that can be used. The various existing findings constitute the latest information that needs to be studied in depth for future strategies in facing the changing era periodically.

Conclusion

Based on the results of research and discussion, it can be concluded that children's education according to their time has important indicators that need to be prepared in the face of changing times of the digital era. Two things that need to be understood are from the aspect of teachers and learning management. The integration of educational aspects in the development of the era digital ideally can be a partner of learning, be active-creative-and-innovative, be a role model for students, and have broad insights. The next aspect is related to the learning management of the digital era, there are two components, namely synergy and tool design. The two indicators are in harmony with the core education triangle, namely parents-students-and-teachers. Synergy has indicators of networking, technology literacy, adequate learning facilities, and parental involvement. While the second indicator is the design of tools consisting of learning models, databases, software, and learning resources. Some of these findings can be concluded that learning management in the era of digital is inseparable from human system. This means that as long as the existing technology develops, it will be in vain if it cannot be utilized properly by educational actors. The need for a balance of this is to create and improve good learning outcomes, according to the motoric and pedagogical development of students, and according to the times. This research can be continued in the next research to further produce the complexity of the research method, namely confirmation using quantitative in various areas.

References

Afrianto. (2018). Being a Professional Teacher in the Era of Industrial Revolution 4.0 : Opportunities , Challenges and Strategies for Innovative Classroom Practices. *English Language Teaching and Research*, *2*(1), 1–13.

Ahmad, H. (2016). Profesionalisme Guru Mengelola Pembelajaran Era Digital. *Prosiding Temu Ilmiah Nasional Guru (Ting) VIII*, *1*(1), 75–80.

Akareem, H. S., & Hossain, S. S. (2016). Determinants of education quality: what makes students' perception different? *Open Review of Educational Research*, *3*(1), 52–67. https://doi.org/10.1080/23265507.2016.1155167

Allen, G. P., Moore, W. M., Moser, L. R., Neill, K. K., Sambamoorthi, U., & Bell, H. S. (2016). The role of servant leadership and transformational leadership in academic pharmacy. *American Journal of Pharmaceutical Education*, *80*(7), 1–7. https://doi.org/10.5688/ajpe807113

Altowairiki, N. (2021). Online collaborative learning: Analyzing the process through living the experience. *International Journal of Technology in Education*, *4*(3), 413–427. https://doi.org/10.46328/ijte.95

Anh, T. T. N., Nguyen, T. P., & Jan, A. (2023). Teachers' perceptions and readiness for digital transformation in education: empirical evidence from vietnam, a developing nation. *FWU Journal of Social Sciences*, *17*(3), 86–99. http://ojs.sbbwu.edu.pk/fwu-journal/index.php/ojss/article/view/1857

Cahyono, S. M., Kartawagiran, B., & Mahmudah, F. N. (2021). Construct exploration of teacher readiness as an assessor of vocational high school competency test. *European Journal of Educational Research*, *10*(3), 1471–1485. https://doi.org/10.12973/EU-JER.10.3.1471

Clovert, M. (2011). *Industry 4.0 Implications for Higher Education Institutions: State-of-maturity and competence needs.*

Creswell, J. W. (2007). *Second Edition Qualitative Inquiry & Research Design. Choosing Among Five Apporaches*. SAGE Publications Asia-Pacific Pte. Ltd.

Darma, D. C., Ilmi, Z., Darma, S., & Syaharuddin, Y. (2020). COVID-19 and its Impact on Education : Challenges from Industry. *Aquamedia*, *4*(2), 2–5.

Desforges, C., & Abouchaar, A. (2003). *The Impact of Parental Involvement , Parental Support and Family Education on Pupil Achievements and Adjustment : A Literature Review*.

Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K., & Kyngäs, H. (2014). Qualitative Content Analysis: A Focus on Trustworthiness. *Account Administrators:Review Your Remote Access Options for SAGE Journals*, *2*(11), 2–10. https://doi.org/10.1177/2158244014522633

Febryani, A. (2019). Penggunaan Aplikasi Learning Management System pada Model Pembelajaran Hybrid / Blended Learning sebagai Strategi Menghadapi Era Revolusi Industri 4 . 0 di Prodi Pendidikan Antropolog. *Fakultas Ilmu Sosial Universitas Negeri Medan*, *2*(1), 471–474.

Fernández-Morante, C., López, B. C., Casal-Otero, L., & León, F. M. (2023). Teachers' digital competence. the case of the university system of galicia. *Journal of New Approaches in Educational Research*, *12*(1), 62–76. https://doi.org/10.7821/naer.2023.1.1139

Funa, A. A., Gabay, R. A. E., Ibardaloza, R. T., & Limjap, A. A. (2022). Knowledge, attitudes, and behaviors of students and teachers towards education for sustainable development. *Cakrawala Pendidikan*, *41*(3), 569–585. https://doi.org/10.21831/cp.v41i3.42407

George-Reyes, C. E., & Glasserman-Morales, L. D. (2022). Preparation and reliability analysis of a questionnaire to measure, from the student's perspective, the teacher's digital skills in non-classroom teaching environments. *Revista Complutense de Educacion*, *33*(3), 413–424. https://doi.org/10.5209/rced.74467

Ghozali, I. (2018). Educational Challenges to the 4 . 0 Industrial Revolution : Experience from Indonesia. *International Academic Seminar*, 1–7.

Heriyanto, F., Suryana, A., & Komariah, A. (2019). Character Education In The Era Of Industrial Revolution 4 . 0 And Its Relevance To The High School Learning Transformation Process Character education in the era of industrial revolution 4 . 0 and its relevance. *Articulos*, *2*(5), 328–340.

Heriyanto, Satori, D., Komariah, A., & Suryana, A. (2020). Character education in the era of industrial revolution 4 . 0 and its relevance to the high school learning transformation process. *Utopía y Praxis Latinoamericana*, *24*(2), 1–24.

Hermann, M., Pentek, T., & Otto, B. (2016). Design Principles for Industrie 4 . 0 Scenarios. *Hawaii International Conference on System Sciences*, *49*, 3928–3937. https://doi.org/10.1109/HICSS.2016.488

Huang, R. T., Yu, C. L., Tang, T. W., & Chang, S. C. (2021). A study of the use of mobile learning technology in Taiwan for language learning. *Innovations in Education and Teaching International*, *58*(1), 59–71. https://doi.org/10.1080/14703297.2019.1628798

Ii, R. L. J., Drummond, D. K., & Camara, S. (2007). What Is Qualitative Research? *Qualitative Research Reports in Communication*, *8*(1), 21–28. https://doi.org/10.1080/17459430701617879

Kalargyrou, V., & Pescosolido, A. T. (2012). Leadership skills in management education. *The Academy of Educational Leadership Journal*, *16*(4), 1–13. https://www.researchgate.net/publication/313238599

Kudryashova, A., & Rybushkina, S. (2016). Teacher ' s Roles to Facilitate Active Learning. *Mediterranean Journal of Social Sciences*, *1*(7), 460–466. https://doi.org/10.5901/mjss.2016.v7n1p460

Lase, D. (2019). *Education and Industrial Revolution 4 . 0*. *August*, 0–15. https://doi.org/10.24114/jh.v10i1

Lawrence, R., Ching, L. F., & Abdullah, H. (2019). Strengths and Weaknesses of Education 4 . 0 in the Higher Education Institution. *International Journal of Innovative Technology and Exploring Engineering*, *9*(2), 511–519. https://doi.org/10.35940/ijitee.B1122.1292S319

Lo, L., Yeung, P.-S., & Yuen, M. (2013). Perceptions of Educators and Parents of Students with Disabilities Concerning the Special Education Process in Hong Kong. *Caise Review*, *1*(1), 2–15. https://doi.org/10.12796/caise-review.2013V1.004

Lucas, G. M., Boberg, J., Traum, D., Artstein, R., Gratch, J., Gainer, A., Johnson, E., & Leuski, A. (2018). Getting to Know Each Other : The Role of Social Dialogue in Recovery from Errors Getting to Know Each Other : The Role of Social Dialogue in Recovery from Errors in Social Robots. *HRI'18*, *5*(8), 344–351. https://doi.org/10.1145/3171221.3171258

Madsen, W., Bricknell, L., Langham, E., O'Mullan, C., Oorloff, A., & Trott, D. (2019). Planning to practice: developing partnership-building skills across the curriculum. *Pedagogy in Health Promotion*, *5*(1), 24–29. https://doi.org/10.1177/2373379918776675

Mahmudah, F. N. (2021). *Analisis data penelitian kualitatif manajemen pendidikan berbantuan software atlas.ti versi 8* (Vol. 1). https://scholar.google.co.id/citations?view_op=view_citation&hl=id&user=vq UnJ9kAAAAJ &citation_for_view=vqUnJ9kAAAAJ:iH-uZ7U-co4C

Mahmudah, F. N., Putra, E. C. S., & Wardana, B. H. (2021). The impacts of covid-19 pandemic: External shock of disruption education and financial stress cohesion. *FWU Journal of Social Sciences*, *15*(2), 42–64. https://doi.org/10.51709/19951272/Summer-2/3

Maolidah, I. S., Ruhimat, T., & Dewi, L. (2017). Efektivitas Penerapan Model Pembelajaran Flipped Classroom pada Peningkatan Kemampuan Berpikir Kirits Siswa. *EDUTCEHNOLOGIA*, *3*(2), 160–170.

Martins, R., Mendes, H., Carvalho, A. I., Paulo, E., Costa, E., Pascoinho, J., & Rodrigues, A. I. (2023). The digital skills of teachers in the teaching practice with students with specific needs. *Journal of Information Systems Engineering and Management*, *8*(3). https://doi.org/10.55267/iadt.07.13624

Maulida, H., Putry, E., Sholeha, R., & Hilmi, D. (2020). VIDEO BASED LEARNING SEBAGAI TREN MEDIA PEMBELAJARAN DI ERA 4 . 0. *Tarbiyatuna: Jurnal Pendidikan Ilmiah*, *5*(1), 1–24.

Mian, S. H., Salah, B., Ameen, W., Moiduddin, K., & Alkhalefah, H. (2020). Adapting Universities for Sustainability Education in Industry 4 . 0 : Channel of Challenges and Opportunities. *Sustainability*, *2*(3), 2–31.

Mohy, R., & Din, E. (2020). Educational Digitization – A Future of Education. In *Futureof Education in Industry 4.0* (pp. 267–287). https://doi.org/10.4018/978-1-5225-9416-1.ch015

Natasuwarna, A. P. (2019). Tantangan Menghadapi Era Revolusi 4.0 - Big data dan Data Mining. *Seminar Nasional Hasil Pengabdian Kepada Masyarakat 2019*, *1*(1), 23–27.

Nofrion. (2007). *Flip Your Class Now; Flipped Classroom melalui Penerapan Model Pembelajaran Exo Olo Task*.

Oktradiksa, A. (2012). Pengembangan Kualitas Kepribadian Guru Ahwy Oktradiksa A . Pendahuluan Manusia pada dasarnya membutuhkan pendidikan , karena sudah menjadi kodratnya bahwa manusia harus di didik atau terdidik . Tanpa pendidikan manusia tidak akan berkembang . Dalam mencip. *Jurnal Pendidikan Islam*, *6*(2), 232–248.

Ospina, S. (2004). Qualitative Research. A Personal Skills Approach. In *Encyclopedia of Leadership*.

Patrikakou, E. (2015). Relationships among parents , students , and teachers : The technology wild card. *Procedia - Social and Behavioral Sciences*, *174*(2), 2253–2258. https://doi.org/10.1016/j.sbspro.2015.01.883

Pirchio, S., Tritrini, C., Passiatore, Y., & Taeschner, T. (2013). The Role of the Relationship between Parents and Educators for Child Behaviour and Wellbeing. *International Journal about Parents in Education*, *7*(2), 145–155.

Prasetyo, T. (2020). Public Learning Facility Installment 4.0 Era. *EDUCIVILIA, Jurnal Pengabdian Masyarakat*, *1*(1), 21–27.

Rodríguez Hoyos, C., Fueyo Gutiérrez, M. A., & Hevia Artime, I. (2021). The digital skills of teachers for innovating in university teaching. *Pixel-Bit: Revista De Medios y Education*, *5*(2), 94–97. https://doi.org/10.12795/pixelbit.86305

Ryan, F., Couglan, M., & Cronin, P. (2016). Interviewing in qualitative research. *Research Methodology Series*, *16*(6), 309–314. https://doi.org/10.12968/ijtr.2009.16.6.42433

Soetanto, H. (2019). *Metode Pembelajaran di Era Revolusi Industri 4.0*.

Subramani, P. C. N., & Iyappan, V. (2018). Innovative methods of teaching and learning. *Proceedings of the Conference on "Recent Trend of Teaching Methods in Education," 3*(1), 20–22.

Sumiran, Waston, Zamroni, & Mahmudah, F. N. (2022). The principal's role in improving the quality: A concepts framework to developing school culture. *Frontiers in Education*, *7*(854463), 1–14. https://doi.org/10.3389/feduc.2022.854463

Suri, H. (2011). Purposeful Sampling in Qualitative Research Synthesis. *Qualitative Research Journal*, *11*(2), 64–75.

Susilo. (2015). Curriculum of EFL Teacher Education and Indonesian Qualification Framework : A Blip of the Future Direction. *Dinamika Ilmu*, *15*(1), 11–24.

Syakdiyah, A., Mahmudah, N. F., & Wiwik, W. (2019). Active Learner Strategies in Era of Disruption : a Literature Review. *International Conference on Progressive Civil Society*, *317*(1), 165–168.

Tampubolon, M. P. (2019). Metode Pembelajaran di "Era Industri 4.0." In *Isu-Isu Pendidikan di Era 4.0* (pp. 1–18).

Tripon, C. (2022). Supporting future teachers to promote computational thinking skills in teaching stem—a case study. *Sustainability (Switzerland)*, *14*(19), 1–17. https://doi.org/10.3390/su141912663

Venkateswara, U., Abinaya, & Vijayakumar. (2022). Impact of resilience theory on student learning outcomes in an esl classroom: An intervention study. *NeuroQuantology*, *20*(7), 8273–8284. https://doi.org/10.14704/nq.2022.20.6.NQ22820

Wahidy, A. (2010). Peran Orang Tua dan Guru Menumbuhkan Motivasi Belajar Siswa. *Universitas PGRI Palembang*, *4*, 1–17.

Waluya, S. B., & Asikin, M. (2019). Strategi Pembelajaran dalam Menghadapi Tantangan Era. *Universitas Negeri Semarang*, *1*(1), 470–473.

Wartomo. (2016). Peran Guru dalam Pembelajaran Era Digital. *Prosiding Temu Ilmiah Nasional Guru (Ting) VIII*, *1*(1), 265–275.

Wati, I., & Kamila, I. (2019). Pentingnya Guru Professional dalam Mendidik Siswa Milenial untuk Menghadapi Revolusi 4.0. *Prosiding Seminar Nasional Pendidikan Program Pascasarjana Universitas PGRI Palembang*, *2*(1), 364–370.

Wibowo, T. (2019). Pembelajaran Matematika dan Risetnya di Era Revolusi Industri 4.0. *Prosiding Sendika*, *5*(1), 676–686.

Widodo, Mahmudah, F. N., Roemintoyo, Sivapalan, S., & Setyawan, B. (2022). Future leadership capacity for vet with the various demands. *Pegem Journal of Education and Instruction*, *13*(1), 156–167. https://doi.org/10.47750/pegegog.13.01.18

Yin, K. R. (2016). Collecting Case Study Evidence. In *Case Study Research* (Issue 4, pp. 99–219).

Yin, R. K. (2003). *Case Study Research Design and Methods Third Edition*. SAGE Publications Asia-Pacific Pte. Ltd.